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EXAMINER
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ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _.   6) ☐ Other: .

DETAILED ACTION

1.   This communication is in response to the amendments filed April 26, 2004.

Summary Of Instant Office Action

2.   Applicant's arguments, filed April 26, 2004, concerning claims 1 - 20 in the previous

Office Action, have been considered and deemed persuasive. The previous rejection has been

removed and replaced with new grounds of rejection based on new art. No claims have been

cancelled, claims 21 and 22 have been added, and claims 1, 9 and 20 have been amended.

Claims 1 – 22 are pending in this application.

Claim Rejections - 35 USC § 112

3.   Claims 1 – 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the enablement requirement. The claim(s) contains subject matter which was not described in

the specification in such a way as to enable one skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention. Applicant has claimed

determining a sequential order for combining models, the disclosure does not provide enough

information to enable one skilled in the art to understand the process by which the models are

combined so that order of the combination of models could be determined by one of ordinary

skill in the art.

Claim Rejections - 35 USC § 101

4.   Claims 1 - 22 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the

technological arts. Mere ideas in the abstract (i.e. abstract idea, law of nature, natural

phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the

"progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences,

for example) and therefore are found to be non-statutory subject matter. For a process claim to

pass muster, the recited process must somehow apply, invoke, use, or advance the technological

arts.

In the present case, the method of evaluating marketing campaign data and evaluating the

performance of a model does not specifically use technology to carry out any of the non-trivial

claimed method steps. For example, the steps of claim 1 of providing analytical models,

determining a sequential order, evaluating a model and defining user trends may be performed

manually or without the aid of any technology. Furthermore, claim 9 teaches a customer

database, but while the customer database does reside on a server as recited in the specification

on page 3, this use of a customer database is a nominal recitation of technology. A graphical

user interface is also claimed and is recited on page 6 of the specification and in figures 3 – 8,

but while the graphical user interface is itself technology, it is a nominal recitation of technology

in that the data could be placed into the models without the use of this technology. A targeting engine, which is a combination of models, is also claimed and recited on page 4 of the specification. However, the applicant does not recite the use of technology as part of the targeting engine and does not use technology to combine the individual models that make up the targeting engine. Furthermore, the individual models do not incorporate technology. The models could be used and perform the stated purpose manually, without the use of technology. The targeting engine, which is a collection of models also does not use technology. Since the targeting engine can be used manually without the use of technology, the data could be input manually, without the use of the graphical user interface, which make the interface a nominal recitation of technology. Thus, claims 1 - 22 do not affect, effect, or are affected by technology, and thus do not recite statutory subject matter. Use of a computer, a computer operable medium, or some other technology device is required in the body of the claims for said claims to be patentable.

The claims 1 - 22 do meet the second part of the two-prong test of producing useful, concrete and tangible result, the claimed invention. However, in order to meet the standards of the two-pronged test, the applicant's invention must incorporate technology within the claimed invention.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the book
"Building Data Mining Applications for CRM" by Kurt Thearling et al, published December 22,
1999 in view of Lee (US 6,542,894).

As per claims 1, 8 and 19, the book "Building Data Mining Applications for CRM"
teaches a method of evaluating marketing campaign data, the data being in the form of database
scores, stored procedures and multidimensional structures, said method comprising the steps of:

providing a plurality of analytic models including marketing models ("once you have
created three cross-selling models, it is time to apply them to new customer data", page 269), and
("the process of modeling can be broken down into subprocesses, each of which involves
creating models for each of the different cross-sell offers", page 269), wherein one or more
models is a plurality of models;

combining the models to generate marketing campaign data ("the process of modeling
can be broken down into subprocesses, each of which involves creating models for each of the
different cross-sell offers", page 269, where creating models for each offer is combining),
including a target group by defining an initial customer group, the initial customer group
includes a list of customers satisfying each of the models and rank ordered by projected
profitability ("higher-level business views of the results such as segmentation analysis, the
construction of descriptive rules, or ROI and profit analysis would also be available", page 108)
wherein projected profitability is based on **at least one** of attrition of the customer ("the rules
that were used in the model in a way that was understandable to the marketing managers
responsible for reducing churn", page 280) where churn is attrition and where reducing churn is a
way to lower costs ("because of these high costs of churn and the opportunity to prevent it,

several companies have begun to provide targeted applications and consulting to build predictive

models specifically for churn", page 280), wherein lowering costs increases profitability;

segmenting gains charts to discover where the model is underperforming, ("figure 1-1

gains chart", page 14) and ("the entire lift chart is shown in figure 12-1", pages 280 - 281),

where the data used in the lift of gains chart is segmented ("Table 12-1", page 285) and ("as

models are constructed and evaluated, a visual lift chart is build automatically so that the user

can easily identify the class of models that provide the best predictive accuracy and

performance");

evaluating the performance of the model over time ("as models are constructed and

evaluated, a visual lift chart is build automatically so that the user can easily identify the class of

models that provide the best predictive accuracy and performance"), wherein over time is

implicit in the statement 'as models are constructed' since this process occurs over time;

defining trends relating to the marketing campaign ("figure 9-4 average revenue per

customer over time", page 249), where the trend caused by the marketing campaign is the

difference between the test and control groups.

The book "Building Data Mining Applications for CRM", does teach multiple models

being used ("each of which involves creating models for each of the different cross-sell offers"

and "once you have generated the three cross-selling models", page 269), but the book does not

teach combing the models sequentially.

Lee teaches the combining of models in a sequential order ("computer program product

residing on a computer readable medium for modeling expected behavior includes instructions

for causing a computer to score with a plurality of models records of a dataset that is segmented

into a like plurality of data segments and combine results obtained from scoring the multiple

models into a single representation of the expected behavior", column 2, lines 18 – 25) and ("the

results combining software can process results in parallel, as shown, or serially from running the

segmented, multiple modeling process", column 5, lines 63 - 65), where serially is sequentially.

Both references are analogous art because both are in the field of data mining, use gains charts,

teach maximizing return on investment, and the book "Building Data Mining Applications for

CRM" refers to the Utica Technologies Model 1 data mining software (page 443) and the Chi

Squared Automatic Interaction Detection or CHAID decision trees software (page 444), where

Utica Technologies is the assignee of the Lee invention that incorporates the CHAID software.

It would have been obvious to one of ordinary skill in the art of data mining at the time

the invention was made to combine the data mining invention taught by the book "Building Data

Mining Applications for CRM" with the multiple sequential models taught by Lee because

combining models would increase the accuracy over merely employing one model alone. A

series of sequential models would become increasingly more accurate with the addition of each

additional model until a point was reaches where a combination of models was optimally

efficient at performing a prediction by incorporating all relevant factors. This benefit would be

offered without a significant increase in cost because the models have already been created and

tested. Therefore, combining models sequentially would offer the benefit of increased accuracy

and performance with very little increase in cost.

As per claims 2 and 12, teaches defining user trends comprises the step of determining

where profitability has been changing over time, ("the other thing that data mining can do for

you in terms of customer profitability is to model what the customer is likely to do in the future.

For instance, how many of your gold level highly profitable customers will transition to bronze level this year? Or on the positive side, how many of your bronze level customers will become gold level customers in the next 12 months?", page 240) where (incremental profitability can be estimated by simply promoting and not promoting to different customer subpopulations at random, for instance promoting to 100,000 different randomly selected customers. If the average revenue for the promoted group is $110 per year and for the non-promoted group is $100, per year then it certainly appears that your promotion has had some positive impact on the per-customer revenue", page 245) where this increase in revenue is also shown charted over time ("Figure 9-4 Average revenue per customer", page 249). While profit is a measure of revenue net costs, Thearling teaches here that there is an inherent increase in profitability as revenue changes over time.

As per claims 3 and 13, the book "Building Data Mining Applications for CRM" teaches a method and system where response rate has been changing over time ("a model will be produced that will predict the response behaviors that you are interested in", page 261), where change is inherent in performing a prediction since there would be nothing to predict if change did not occur.

As per claims 4 and 14, "Building Data Mining Applications for CRM" teaches a method of defining user trends further comprises determining where a number of accounts are being closed ("a moderate sized cellular phone company of 500,000 customers had an annual churn rate of 25%", page 280), wherein churn is the number of accounts closed and 25% of 500,000 is the number of accounts closed.

As per claims 5 and 16, "Building Data Mining Applications for CRM" teaches a system that evaluates a model by creating history structures based on user defined attributes ("Table 6-2 some commercially available cluster tags", page 140) and ("table 6.4 a simple clustering of the example database", page 143), where age, balance, income, eyes, and gender are all user defined attributes.

As per claims 6, 11 and 17, "Building Data Mining Applications for CRM" teaches a method and system wherein said step of defining user trends further comprises the step of analyzing a particular population segment ("deployed against a database from one of the largest cellular providers in New England"), wherein cell phone users in New England are a population segment.

As per claims 7 and 18, "Building Data Mining Applications for CRM" teaches a method and system wherein said step of evaluating a performance of the model combination over time further comprises the step of maintaining feedback ("those customers who did not respond to these direct mail offers within one month were also contacted via telemarketing", page 291), wherein response to mail offers and telemarketing survey are types of feedback.

As per claims 9 and 20, the book "Building Data Mining Applications for CRM" teaches a system for evaluating marketing campaign data, the system comprising:

a customer database further comprising historical campaign results ("Table 11-5 the results when the process optimizes selection using the external constraints", page 275), wherein a table of data is a database;

a graphical user interface for presentation of trend analysis data (""figure 2-4 GUI / Presentation logic", page 33), wherein GUI is a graphical user interface;

a targeting engine ("a scoring engine that is part of the model-building application", page 386), providing a plurality of analytic models ("once you have created three cross-selling models, it is time to apply them to new customer data", page 269) including marketing and risk models, the marketing models include **at least one of** an attrition model ("the Churn Prophet product from Lightbridge Inc., which has been created specifically for detecting customer churn", page 106), where churn is attrition;

generate marketing campaign data including a target group by defining an initial customer group, the initial customer group includes a list of customers satisfying each of the models and rank ordered by projected profitability ("higher-level business views of the results such as segmentation analysis, the construction of descriptive rules, or ROI and profit analysis would also be available", page 108) wherein projected profitability is based on **at least one** of attrition of the customer ("the rules that were used in the model in a way that was understandable to the marketing managers responsible for reducing churn", page 280) where churn is attrition and where reducing churn is a way to lower costs ("because of these high costs of churn and the opportunity to prevent it, several companies have begun to provide targeted applications and consulting to build predictive models specifically for churn", page 280), wherein lowering costs increases profitability;

structures that segment gains charts to discover where the model is underperforming, ("the entire lift chart is shown in figure 12-1", pages 280 - 281), where the data used in the lift of gains chart is segmented ("Table 12-1", page 285) and ("as models are constructed and evaluated, a visual lift chart is build automatically so that the user can easily identify the class of models that provide the best predictive accuracy and performance") where the models with the

best predictive accuracy will be the best performing and the models that provide the worst

predictive accuracy will be underperforming;

evaluating the performance of the model over time ("as models are constructed and

evaluated, a visual lift chart is build automatically so that the user can easily identify the class of

models that provide the best predictive accuracy and performance"), wherein over time is

implicit in the statement 'as models are constructed' since this process occurs over time;

defining trends relating to the marketing campaign ("figure 9-4 average revenue per

customer over time", page 249), where the trend is the difference between the test and control

groups.

The book "Building Data Mining Applications for CRM", does teach multiple models

being used ("each of which involves creating models for each of the different cross-sell offers"

and "once you have generated the three cross-selling models", page 269), but the book does not

teach coming the models sequentially.

Lee teaches the combining of models in a sequential order ("computer program product

residing on a computer readable medium for modeling expected behavior includes instructions

for causing a computer to score with a plurality of models records of a dataset that is segmented

into a like plurality of data segments and combine results obtained from scoring the multiple

models into a single representation of the expected behavior", column 2, lines 18 – 25) and ("the

results combining software can process results in parallel, as shown, or serially from running the

segmented, multiple modeling process", column 5, lines 63 - 65), where serially is sequentially.

Both references are analogous art because both are in the field of data mining, use gains charts,

teach maximizing return on investment, and the book "Building Data Mining Applications for

CRM" refers to the Utica Technologies Model 1 data mining software (page 443) and the Chi

Squared Automatic Interaction Detection or CHAID decision trees software (page 444), where

Utica Technologies is the assignee of the Lee invention that incorporates the CHAID software.

It would have been obvious to one of ordinary skill in the art of data mining at the time

the invention was made to combine the data mining invention taught by the book "Building Data

Mining Applications for CRM" with the multiple sequential models taught by Lee because

combining models would increase the accuracy over merely employing one model alone. A

series of sequential models would become increasingly more accurate with the addition of each

additional model until a point was reaches where a combination of models was optimally

efficient at performing a prediction by incorporating all relevant factors. This benefit would be

offered without a significant increase in cost because the models have already been created and

tested. Therefore, combining models sequentially would offer the benefit of increased accuracy

and performance with very little increase in cost.

As per claim 10, "Building Data Mining Applications for CRM" teaches the use of

OLAP, ("Online Analytical Processing is the name given to the database and user interface tools

that allow end users to quickly navigate within their data", page 91).

As per claim 15, "Building Data Mining Applications for CRM" teaches determining the

propensity of a customer to avail themselves to other products over time (cross-selling is the

process by which you offer your existing customers new products and services", page 264) and

("table 11-1 are the probabilities that a customer will respond to a particular offer", page 271).

As per claims 21 and 22, "Building Data Mining Applications for CRM" teaches a

system wherein said database further comprises storing in a database historical data for a

plurality of potential customers including for each potential customer **at least one** of a age,

income and transaction measure, ("age", page 389), ("income", page 389), and a transaction

measure, ("Table 11-3 New Mortgage Score; Refinance Score; Second Mortgage Score",

page 272), wherein the dollar value of a mortgage is a transaction measure and a transaction

history.

The book "Building Data Mining Applications for CRM" does teach defining a group by

applying a model ("data mining is used for segmentation in a variety of ways. First, it can be

used to define customer segments based on their predicted behavior. For instance, the leaf nodes

of a decision tree can be viewed as an individual segment", page 3087). "Building Data Mining

Applications for CRM" also teaches multiple models being used ("each of which involves

creating models for each of the different cross-sell offers" and "once you have generated the

three cross-selling models", page 269). However, "Building Data Mining Applications for

CRM" does not teach coming the models sequentially as in determining a sequential order for

combining models and applying the sequence to define the initial customer group by applying a

first model included in the determined sequential order to each of the plurality of potential

customers included in the database to generate a first segment of only those potential

customers satisfying the first model, applying a second model included in the determined

sequential order to the first segment to generate a second segment of only those potential

customers satisfying the combination of the first and second models, and then applying each

subsequent model.

Lee teaches the combining of models in a sequential order ("computer program product

residing on a computer readable medium for modeling expected behavior includes instructions

for causing a computer to score with a plurality of models records of a dataset that is segmented into a like plurality of data segments and combine results obtained from scoring the multiple models into a single representation of the expected behavior", column 2, lines 18 – 25) and ("the results combining software can process results in parallel, as shown, or serially from running the segmented, multiple modeling process", column 5, lines 63 - 65), where serially is sequentially. Both references are analogous art because both are in the field of data mining, use gains charts, teach maximizing return on investment, and the book "Building Data Mining Applications for CRM" refers to the Utica Technologies Model 1 data mining software (page 443) and the Chi Squared Automatic Interaction Detection or CHAID decision trees software (page 444), where Utica Technologies is the assignee of the Lee invention that incorporates the CHAID software.

It would have been obvious to one of ordinary skill in the art of data mining at the time the invention was made to combine the data mining and segmentation invention taught by the book "Building Data Mining Applications for CRM" with the multiple sequential models taught by Lee because combining models that segment data would increase the accuracy over merely employing one model alone to generate one segment. A series of sequential models would become increasingly more accurate with the addition of each additional model until a point was reaches where a combination of models was optimally efficient at performing a prediction by incorporating all relevant factors. This benefit would be offered without a significant increase in cost because the models have already been created and tested. Therefore, combining models sequentially would offer the benefit of increased accuracy and performance with very little increase in cost.

Response to Amendments

8.   Applicant's arguments with respect to claims 1 - 22 have been considered but are moot in

view of the new ground(s) of rejection.

Conclusion

9.   No claims were allowed and all claims were rejected.

10.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

   Lee (US 6,317,752) – Data mining with multiple models

11.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Shaffer whose telephone number is (703) 305-5283. The Examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643.

   Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703) 305-3900.

   Any response to this action should be mailed to:

   Commissioner of Patents and Trademarks
   Washington D.C.   20231
Or faxed to:

   (703) 746-7238   [After Final communications, labeled "Box AF"]

   (703) 746-7239   [Official communications]

   (703) 706-9124   [Informal/Draft communications, labeled
                "PROPOSED" or "DRAFT"]

   Hand delivered responses should be brought to Crystal Park 5, 2451 Crystal Drive, Arlington, VA, 7th floor receptionist.

Eric Shaffer

October 1, 2004

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